

WHAT IS CLAIMED IS:

1. An optical characteristic measurement device comprising:
  - an optical path separation element to which a parallel laser beam is made incident through an aperture;
  - a first face-type photo-detector that receives the laser beam transmitted through the optical path separation element; and
  - a second face-type photo-detector that receives the laser beam reflected by the optical path separation element,wherein a length of an optical path from the aperture to the first face-type photo-detector is set to be different from a length of an optical path from the aperture to the second face-type photo-detector, and an incident angle of the laser beam and a position of a center of gravity of a distribution of a light quantity of the laser beam at the aperture are measured based on a distance from a reference position to a light receiving center position on the first face-type photo-detector, a distance from a reference position to a light receiving center position on the second face-type photo-detector, the length of the optical path from the aperture to the first face-type photo-detector, and the length of the optical path from the aperture to the second face-type photo-detector.
2. The optical characteristic measurement device according to claim 1, further comprising an interferometer that detects the laser beam which enters the optical path separation element.

3. The optical characteristic measurement device according to claim 1, wherein both the first face-type photo-detector and the second face-type photo-detector are a position sensing element of a photoelectric conversion type.

4. The optical characteristic measurement device according to claim 1, wherein one of the first face-type photo-detector and the second face-type photo-detector is a position sensing element of a photoelectric conversion type and the other is an image pick-up device.

5. The optical characteristic measurement device according to claim 1, wherein both of the first face-type photo-detector and the second face-type photo-detector are image pick-up devices.

6. The optical characteristic measurement device according to claim 1, further comprising:

an optical path synthesis element arranged either at a position on the optical path from the optical path separation element to the first face-type photo-detector or at a position on the optical path from the optical path separation element to the second face-type photo-detector;

a correction light source that emits a correction parallel light to the optical path separation element through the optical path synthesis element, and

a correction reflection face that reflects the parallel light from the optical path separation element to the optical path separation element to make the first face-type photo-detector and the second face-type photo-detector receive its return

light.

7. The optical characteristic measurement device according to claim 6, further comprising an interferometer that detects the laser beam which enters the optical path separation element.

8. The optical characteristic measurement device according to claim 6, wherein both the first face-type photo-detector and the second face-type photo-detector are a position sensing element of a photoelectric conversion type.

9. The optical characteristic measurement device according to claim 6, wherein one of the first face-type photo-detector and the second face-type photo-detector is a position sensing element of a photoelectric conversion type and the other is an image pick-up device.

10. The optical characteristic measurement device according to claim 6, wherein both of the first face-type photo-detector and the second face-type photo-detector are image pick-up devices.

11. An optical characteristic measurement device comprising:  
a convergent lens to which a parallel laser beam is made incident; and  
an image pick-up device which is arranged near a focal position of the converging lens,

wherein an incident angle of the laser beam to the convergent lens is

measured based on a distance from a reference position to a light receiving center position in the image pick-up device and a length of an optical path from the convergent lens to a face-type photo-detector.

12. The optical characteristic measurement device according to claim 11, further comprising an interferometer that detects the incident light to the converging lens.

13. An optical characteristic measurement device comprising:  
an optical path separation element to which a parallel laser beam is made incident through an aperture;

a first face-type photo-detector that receives the laser beam which is transmitted through or reflected by the optical path separation element;

a second face-type photo-detector that receives the laser beam which is reflected by or transmitted through the optical path separation element; and

a convergent lens arranged on an optical path from the optical path separation element to the second face-type photo-detector,

wherein the second face-type photo-detector is arranged near a focal position of the converging lens, and

wherein an incident angle of the parallel light beam to the optical path separation element is measured based on a distance from a reference position to a light receiving center position on the second face-type photo-detector and a length of an optical path from the convergent lens to the second face-type photo-detector, and

a position of a center of gravity of distribution of a light quantity at the aperture is measured based on the incident angle, the distance from the reference position to the light receiving center position on the first face-type photo-detector, and the length of the optical paths from the aperture to the first face-type photo-detector.

14. The optical characteristic measurement device according to claim 13, further comprising an interferometer that detects the incident light to the optical path separation element.

15. The optical characteristic measurement device according to claim 13, wherein both the first face-type photo-detector and the second face-type photo-detector are a position sensing element of a photoelectric conversion type.

16. The optical characteristic measurement device according to claim 13, wherein one of the first face-type photo-detector and the second face-type photo-detector is a position sensing element of a photoelectric conversion type and the other is an image pick-up device.

17. The optical characteristic measurement device according to claim 13, wherein both of the first face-type photo-detector and the second face-type photo-detector are image pick-up devices.

18. An optical characteristic measurement device comprising:

an optical path separation element to which a parallel laser beam is made incident through an aperture;

a first face-type photo-detector that receives the laser beam transmitted through the optical path separation element; and

a second face-type photo-detector that receives the laser beam reflected by the optical path separation element,

wherein a length of an optical path from the aperture to the first face-type photo-detector is set to be different from a length of an optical path from the aperture to the second face-type photo-detector.

19. An optical type displacement meter comprising:

a displacement measuring light source that emits a parallel light beam for displacement measurement;

an optical path separation element to which the parallel light beam emitted from the displacement measuring light source enters;

a reflection face that reflects the parallel light beam which is transmitted through or reflected by the optical path separation element toward the optical path separation element; and

a face-type photo-detector that receives the return light from the reflection face which is reflected by or transmitted through the optical path separation element,

wherein the reflection face is displaced with an inclined state at a prescribed angle with respect to an optical axis of the optical path separation element so that a displacement amount of the reflection face is measured based on an inclined

angle of the reflection face and a moving amount of light receiving positions on the face-type photo-detector before and after its displacement.

20. The optical characteristic measurement device according to claim 19, further comprising an interferometer that detects the laser beam which enters the optical path separation element.